

IN THE CLAIMS:

- 1-23 (Cancelled)
24. (Amended) A method of fabricating a dual spin valve (SV) sensor which comprises the steps of:
- a) sputter depositing the multilayer dual SV sensor including a first spin valve (SV) stack, a second spin valve ~~(SV)~~ (SV) stack and a longitudinal bias stack disposed between the first and second SV stacks;
  - b) annealing the dual SV sensor at a first temperature in a first magnetic field oriented in a transverse direction perpendicular to an air bearing surface; and
  - c) annealing the dual SV sensor at a second temperature in a second magnetic field oriented in a longitudinal direction parallel to said air bearing surface, wherein said second temperature is less than said first temperature and said second magnetic field has a magnitude smaller than said first magnetic field.
- 25 (Original) The method of fabricating a dual SV sensor as recited in claim 24, wherein said first temperature is about 280 C and said second temperature is about 240 C.

26. (Amended) The method of fabricating a dual SV sensor as recited in claim 24, wherein said first first magnetic field has a magnitude of about 10,000 Oe and said second magnetic field has a magnitude of about 200 Oe.

27-35 (Cancelled)

36. (Previously presented) A method as recited in claim 24 wherein said depositing a longitudinal bias stack further comprises:  
depositing a first decoupling layer;  
depositing a first ferromagnetic layer;  
depositing a layer of antiferromagnetic material;  
depositing a second ferromagnetic layer; and  
depositing a second decoupling layer ; .
37. (Amended) A method as recited in claim 36 wherein said first and second decoupling layers comprise layer comprises, Cu-O and Ru.
38. (Previously presented) A method as recited in claim 36 wherein said first and second ferromagnetic layers comprise Co-Fe.
39. (Previously presented) A method as recited in claim 36 wherein said layer of antiferromagnetic material comprises Ir-Mn.

40. (Amended) A method as recited as recited in claim 24 wherein said step of depositing a dual spin valve sensor by comprises DC-magnetron sputtering.
41. (Previously presented) A method as recited in claim ~~37~~ 38 wherein said Cu-O layers are deposited by DC-magnetron sputtering using a Cu target in a mixture of argon and oxygen gases.